

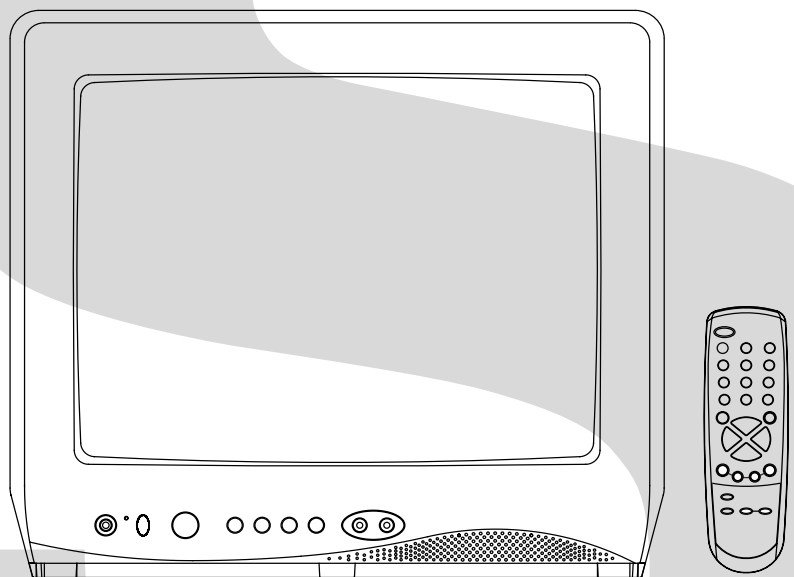
TOSHIBA

FILE NO. 050-200503
(MFR'S VERSION A)

SERVICE MANUAL

COLOR TELEVISION

13A25 13A25C



DOCUMENT CREATED IN JAPAN, February, 2005

SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.

Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.

4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.

Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.

Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

(INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the external exposure metal [Note 2] should be more than 1M ohm by using the 500V insulation resistance meter [Note 1].
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

[Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

[Note 2]

External exposure metal: Antenna terminal
Headphone jack

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the VERSION LETTER.)

1. MODEL NUMBER and VERSION LETTER

The MODEL NUMBER can be found on the back of each product and the VERSION LETTER can be found at the end of the SERIAL NUMBER.

2. PART NO. and DESCRIPTION

You can find it in your SERVICE MANUAL.

IMPORTANT

When you exchange IC and Transistor with a heat sink, apply silicon grease on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor.)

ABOUT LEAD FREE SOLDER (PbF)

Distinction of PbF PCB:

PCBs (manufactured) using lead free solder will have a PbF printing on the PCB.
(Please refer to figures.)



Caution:

- Pb free solder has a higher melting point than standard solder;
Typically the melting point is 50°F~70°F(30°C~40°C) higher.
Please use a soldering iron with temperature control and adjust it to 650°F ± 20°F (350°C ± 10°C).
In case of using high temperature soldering iron, please be carefull not to heat too long.
- Pb free solder will tend to splash when heated too high (about 1100°F/ 600°C).
- All products with the printed circuit board with PbF printing must be serviced with lead free solder.
When soldering or unsoldering, completely remove all of the solder from the pins or solder area,
and be sure to heat the soldering points with the lead free solder until it melts sufficiently.

Recommendations

Recommended lead free solder composition is Sn-3.0Ag-0.5Cu.

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GENERAL SPECIFICATIONS

G-1	TV System	CRT	CRT Size / Visual Size	13 inch / 335.4mmV
			CRT Type	Normal
			Deflection	90 degree
			Magnetic Field BV/BH	+0.45G/0.18G
		Color System		NTSC
		Speaker		1Speaker
			Position	Bottom
			Size	3 Inch
			Impedance	8 ohm
		Sound Output	MAX	1.0 W
G-2	Tuning System		10%(Typical)	0.8 W
		NTSC3.58+4.43 /PAL60Hz		No
		Broadcasting System		US System M
		Tuner and Receive CH	System	1Tuner
			Destination	USA(W/ CATV)
			Tuning System	F-Synth
			Input Impedance	VHF/UHF 75 ohm
			CH Coverage	2 - 69, 4A, A-5 - A-1, A - I, J - W, W+1 - W+84
		Intermediate Frequency	Picture(FP)	45.75MHz
			Sound(FS)	41.25MHz
G-3	Power		FP-FS	4.50MHz
		Preset CH		No
		Stereo/Dual TV Sound		No
		Tuner Sound Muting		Yes
		Power Source	AC	120V AC 60Hz
			DC	
		Power Consumption	at AC	
			Stand by (at AC)	54 W at AC 120 V 60 Hz
			Per Year	5 W at AC 120 V 60 Hz
				-- kWh/Year
G-4	Regulation	Protector	Power Fuse	Yes
			Safety	UL
			Radiation	FCC
			X-Radiation	DHHS
G-5	Temperature	Operation		+5oC ~ +40oC
		Storage		-20oC ~ +60oC
G-6	Operating Humidity			Less than 80% RH

GENERAL SPECIFICATIONS

G-7	On Screen Display	Menu		Yes		
		Menu Type		Character		
		Picture		Yes		
		Contrast		Yes		
		Brightness		Yes		
		Color		Yes		
		Tint		Yes		
		Sharpness		Yes		
		Audio		No		
		Bass		No		
		Treble		No		
		Balance		No		
		BBE On/Off		No		
		Stable Sound On/Off		No		
		CH Set Up		Yes		
		TV/CABLE(CATV)		Yes		
		Auto CH Memory		Yes		
		Add/ Delete		Yes		
		Language		Yes		
		V-chip		Yes		
		Lock		Yes		
		On Timer		Yes		
		CH Label		No		
		Favorite CH		No		
		Color Stream DVD/DTV		No		
		Control Level		Yes		
		Volume		Yes		
		Brightness		Yes		
		Contrast		Yes		
		Color		Yes		
		Tint		Yes		
		Sharpness		Yes		
		Tuning		No		
		Bass		No		
		Treble		No		
		Balance		No		
		Back Light		No		
		Stereo,Audio Output,SAP		No		
		Video		Yes		
		Color Stream		No		
		Channel(TV/Cable)		Yes		
		CH Label		No		
		Game Timer		Yes		
		Sleep Timer		Yes		
		Sound Mute		Yes		
		V-chip Rating		Yes		
G-8	OSD Language			English	French	Spanish
G-9	Clock and Timer	Sleep Timer	Max Time	120 Min		
			Step	10 Min		
		On Timer	Program(On Timer)	Yes		
		Wake Up Timer		No		
		Timer Back-up (at Power Off Mode)	more than	--	Min	Sec

GENERAL SPECIFICATIONS

G-10	Remote Control	Unit	RC-EH
		Glow in Dark Remocon	Yes
		Format	Toshiba
		Custom Code	<u>40-BF h</u>
		Power Source	3V
		Voltage(D.C)	UM-4 x 2 pcs
		UM size x pcs	
		Total Keys	<u>27</u> Keys
		Keys	Power
		1	Yes
		2	Yes
		3	Yes
		4	Yes
		5	Yes
		6	Yes
		7	Yes
		8	Yes
		9	Yes
		0	Yes
		100	No
		CH Up	Yes
		CH Down	Yes
		Volume Up	Yes
		Volume Down	Yes
		TV/Caption/Text	Yes
		CH1/CH2	Yes
		TV/Video(TV/AV)	Yes
		CH RTN/CH ENT(Quick View)	Yes
		Sleep	Yes
		RE Call(Call)	Yes
		Reset	Yes
		Menu	Yes
		Enter	Yes
		Mute	Yes
		Exit	No
		MTS(Audio Select)	No
		Set +	Yes
		Set -	Yes
		Multi Brand Keys	CH Up(VCR)
			CH Down(VCR)
			Pause/Still
			TV/VCR(VCR)
			Code
			FF
			Rew
			Rec
			Play
			Stop
			TV
			VCR
			Cable

GENERAL SPECIFICATIONS

G-11	Features	Auto Degauss	Yes
		Auto Shut Off	Yes
		Canal+	No
		CATV	Yes
		Anti-theft	No
		Rental	No
		Memory(Last CH)	Yes
		Memory(Last Volume)	Yes
		V-Chip	Yes
		Type	USA,ORION Type
		BBE	No
		Auto Search	No
		CH Allocation	No
		SAP	No
		Channel Lock	No
		Just Clock Function	No
		Game Position	No
		CH Label	No
		VM Circuit	No
		Full OSD	No
		Premiere	No
		Comb Filter	No
			Lines
		Auto CH Memory	Yes
		Hotel Lock	No
		Closed Caption	Yes
		FBT Leak Test Protect	Yes
		CH Lock	Yes
		Video Lock	Yes
		Game Timer (Max Time:120 Min)	Yes
		Stable Sound	No
		Energy Star	No
		Power On Memory	Yes
		Favorite CH	No
G-12	Accessories	Owner's Manual	Language w/Guarantee Card
		Remote Control Unit	English/Spanish[From '04 DEC O/R] Yes
		Rod Antenna	Yes
			No
			Poles
			Terminal
		Loop Antenna	No
			Terminal
			-
		U/V Mixer	No
		DC Car Cord (Center+)	No
		Guarantee Card	No
		Warning Sheet	No
		Circuit Diagram	No
		Antenna Change Plug	No
		Service Facility List	No
		Important Safeguard	No
		Dew/AHC Caution Sheet	No
		AC Plug Adapter	No
		Quick Set-up Sheet	No
		Battery	Yes
			UM size x pcs
			OEM Brand
			UM-4 x 2 pcs
			No
		AC Cord	No
		AV Cord (2Pin-1Pin)	No
		Registration Card (NDL Card)	Yes
		ESP Card	No
		300 ohm to 75 ohm Antenna Adapter	No

GENERAL SPECIFICATIONS

G-13	Interface	Switch	Front	Power	Yes	
				System Select	No	
		Main Power SW	No			
		Sub Power	No			
		Channel Up/Reset	Yes			
		Channel Down/Enter	Yes			
		Volume Up/Set Up	Yes			
		Volume Down/Set Down	Yes			
		MENU=Volume Up+Volume Down	Yes			
		Rear	AC/DC	No		
			TV/CATV Selector	No		
			Degauss	No		
			Main Power SW	No		
		Indicator	Power	Yes		
			Stand-by	No		
			On Timer	No		
		Terminals	Front	Video Input	RCA	
				Audio Input	RCA x 1	
		Other Terminal		Ear Phone		
		Rear	Video Input(Rear1)	No		
			Video Input(Rear2)	No		
			Audio Input(Rear1)	No		
			Audio Input(Rear2)	No		
			Video Output	No		
			Audio Output	No		
			Euro Scart	No		
			Color Stream	No		
			Diversity	No		
Ext Speaker	No					
DC Jack 12V(Center +)	No					
VHF/UHF Antenna Input	F Type					
AC Outlet	No					
G-14	Set Size		Approx. W x D x H (mm)		<u>362 x 360 x 320.5</u>	
G-15	Weight		Net (Approx.)		<u>9.5 kg (20.9 lbs)</u>	
		Gross (Approx.)		<u>11.0kg (24.4lbs)</u>		
G-16	Carton	Master Carton		No		
			Content	---- Sets		
			Material	-- /--		
			Dimensions W x D x H(mm)	<u>-- x -- x --</u>		
			Description of Origin	No		
		Gift Box		Yes		
			Material	Double/Brown		
			Dimensions W x D x H(mm)	<u>440 x 408 x 380</u>		
			Design	As per Buyer's		
			Description of Origin	Yes		
		Drop Test		Natural Dropping At 1 Corner / 3 Edges / 6 Surfaces		
			Height (cm)	62		
		Container Stuffing	866		Sets/40' container	
G-17	Cabinet Material	Cabinet	Cabinet Front	PS 94V0 DECABROM		
			Cabinet Rear	PS 94V0 DECABROM		
		PCB	Non-Halogen Demand	No		
			Eyelet Demand	Yes		
G-18	Environment	Pb Free		Phase3		

GENERAL SPECIFICATIONS

G-1	TV System	CRT	CRT Size / Visual Size	13 inch / 335.4mmV
			CRT Type	Normal
			Deflection	90 degree
			Magnetic Field BV/BH	+0.45G/0.18G
		Color System		NTSC
		Speaker		1Speaker
			Position	Bottom
			Size	3 Inch
			Impedance	8 ohm
		Sound Output	MAX	1.0 W
G-2	Tuning System		10%(Typical)	0.8 W
		NTSC3.58+4.43 /PAL60Hz		No
		Broadcasting System		US System M
		Tuner and Receive CH	System	1Tuner
			Destination	USA(W/ CATV)
			Tuning System	F-Synth
			Input Impedance	VHF/UHF 75 ohm
			CH Coverage	2 - 69, 4A, A-5 - A-1, A - I, J - W, W+1 - W+84
		Intermediate Frequency	Picture(FP)	45.75MHz
			Sound(FS)	41.25MHz
G-3	Power		FP-FS	4.50MHz
		Preset CH		No
		Stereo/Dual TV Sound		No
		Tuner Sound Muting		Yes
		Power Source	AC	120V AC 60Hz
			DC	
		Power Consumption	at AC	
			Stand by (at AC)	54 W at AC 120 V 60 Hz
			Per Year	5 W at AC 120 V 60 Hz
				-- kWh/Year
G-4	Regulation	Protector	Power Fuse	Yes
			Safety	CSA
			Radiation	IC
			X-Radiation	HWC
G-5	Temperature	Operation		+5oC ~ +40oC
		Storage		-20oC ~ +60oC
G-6	Operating Humidity			Less than 80% RH

GENERAL SPECIFICATIONS

G-7	On Screen Display	Menu		Yes	
		Menu Type		Character	
		Picture		Yes	
		Contrast		Yes	
		Brightness		Yes	
		Color		Yes	
		Tint		Yes	
		Sharpness		Yes	
		Audio		No	
		Bass		No	
		Treble		No	
		Balance		No	
		BBE On/Off		No	
		Stable Sound On/Off		No	
		CH Set Up		Yes	
		TV/CABLE(CATV)		Yes	
		Auto CH Memory		Yes	
		Add/ Delete		Yes	
		Language		Yes	
		V-chip		No	
		Lock		Yes	
		On Timer		Yes	
		CH Label		No	
		Favorite CH		No	
		Color Stream DVD/DTV		No	
		Control Level		Yes	
		Volume		Yes	
		Brightness		Yes	
		Contrast		Yes	
		Color		Yes	
		Tint		Yes	
		Sharpness		Yes	
		Tuning		No	
		Bass		No	
		Treble		No	
		Balance		No	
		Back Light		No	
		Stereo,Audio Output,SAP		No	
		Video		Yes	
		Color Stream		No	
		Channel(TV/Cable)		Yes	
		CH Label		No	
		Game Timer		Yes	
		Sleep Timer		Yes	
		Sound Mute		Yes	
		V-chip Rating		No	
G-8	OSD Language		English French Spanish		
G-9	Clock and Timer	Sleep Timer	Max Time	120 Min	
			Step	<u> 10 </u> Min	
		On Timer	Program(On Timer)	Yes	
		Wake Up Timer		No	
		Timer Back-up (at Power Off Mode)	more than	--	Min Sec

GENERAL SPECIFICATIONS

G-10	Remote Control	Unit	RC-EH
		Glow in Dark Remocon	Yes
		Format	Toshiba
		Custom Code	<u>40-BF h</u>
		Power Source	3V
		Voltage(D.C)	UM-4 x 2 pcs
		UM size x pcs	
		Total Keys	<u>27</u> Keys
		Keys	Power
		1	Yes
		2	Yes
		3	Yes
		4	Yes
		5	Yes
		6	Yes
		7	Yes
		8	Yes
		9	Yes
		0	Yes
		100	No
		CH Up	Yes
		CH Down	Yes
		Volume Up	Yes
		Volume Down	Yes
		TV/Caption/Text	Yes
		CH1/CH2	Yes
		TV/Video(TV/AV)	Yes
		CH RTN/CH ENT(Quick View)	Yes
		Sleep	Yes
		RE Call(Call)	Yes
		Reset	Yes
		Menu	Yes
		Enter	Yes
		Mute	Yes
		Exit	No
		MTS(Audio Select)	No
		Set +	Yes
		Set -	Yes
		Multi Brand Keys	CH Up(VCR)
			CH Down(VCR)
			Pause/Still
			TV/VCR(VCR)
			Code
			FF
			Rew
			Rec
			Play
			Stop
			TV
			VCR
			Cable

GENERAL SPECIFICATIONS

G-11	Features	Auto Degauss	Yes
		Auto Shut Off	Yes
		Canal+	No
		CATV	Yes
		Anti-theft	No
		Rental	No
		Memory(Last CH)	Yes
		Memory(Last Volume)	Yes
		V-Chip	No
		Type	
		BBE	No
		Auto Search	No
		CH Allocation	No
		SAP	No
		Channel Lock	No
		Just Clock Function	No
		Game Position	No
		CH Label	No
		VM Circuit	No
		Full OSD	No
		Premiere	No
		Comb Filter	No
		Lines	
		Auto CH Memory	Yes
		Hotel Lock	No
		Closed Caption	Yes
		FBT Leak Test Protect	Yes
		CH Lock	Yes
		Video Lock	Yes
		Game Timer (Max Time:120 Min)	Yes
		Stable Sound	No
		Energy Star	No
		Power On Memory	Yes
		Favorite CH	No
G-12	Accessories	Owner's Manual	Language w/Guarantee Card
		Remote Control Unit	English/French
		Rod Antenna	Yes
		Poles	No
		Terminal	
		Loop Antenna	No
		Terminal	-
		U/V Mixer	No
		DC Car Cord (Center+)	No
		Guarantee Card	No
		Warning Sheet	No
		Circuit Diagram	No
		Antenna Change Plug	No
		Service Facility List	No
		Important Safeguard	No
		Dew/AHC Caution Sheet	No
		AC Plug Adapter	No
		Quick Set-up Sheet	No
		Battery	Yes
		UM size x pcs	UM-4 x 2 pcs
		OEM Brand	No
		AC Cord	No
		AV Cord (2Pin-1Pin)	No
		Registration Card (NDL Card)	No
		ESP Card	No
		300 ohm to 75 ohm Antenna Adapter	No

GENERAL SPECIFICATIONS

G-13	Interface	Switch	Front	Power	Yes	
				System Select	No	
				Main Power SW	No	
				Sub Power	No	
				Channel Up/Reset	Yes	
				Channel Down/Enter	Yes	
				Volume Up/Set Up	Yes	
				Volume Down/Set Down	Yes	
				MENU=Volume Up+Volume Down	Yes	
			Rear	AC/DC	No	
				TV/CATV Selector	No	
				Degauss	No	
				Main Power SW	No	
		Indicator		Power	Yes	
				Stand-by	No	
				On Timer	No	
		Terminals	Front	Video Input	RCA RCA x 1 Ear Phone	
				Audio Input		
				Other Terminal		
			Rear	Video Input(Rear1)	No	
				Video Input(Rear2)	No	
				Audio Input(Rear1)	No	
				Audio Input(Rear2)	No	
				Video Output	No	
				Audio Output	No	
				Euro Scart	No	
				Color Stream	No	
				Diversity	No	
				Ext Speaker	No	
				DC Jack 12V(Center +)	No	
				VHF/UHF Antenna Input	F Type	
				AC Outlet	No	
G-14	Set Size	Approx. W x D x H (mm)		<u>362 x 360 x 320.5</u>		
G-15	Weight	Net (Approx.)		<u>9.5 kg (20.9 lbs)</u>		
		Gross (Approx.)		<u>11.0kg (24.4lbs)</u>		
G-16	Carton	Master Carton			No	
			Content	---- Sets		
			Material	-- /--		
			Dimensions W x D x H(mm)	<u>-- x -- x --</u>		
			Description of Origin	No		
		Gift Box			Yes	
			Material	Double/Brown		
			Dimensions W x D x H(mm)	<u>440 x 408 x 380</u>		
			Design	As per Buyer's		
			Description of Origin	Yes		
		Drop Test			Natural Dropping At 1 Corner / 3 Edges / 6 Surfaces	
			Height (cm)	62		
			Container Stuffing		<u>866</u> Sets/40' container	
G-17	Cabinet Material	Cabinet	Cabinet Front	PS 94V0 DECABROM		
			Cabinet Rear	PS 94V0 DECABROM		
		PCB	Non-Halogen Demand	No		
			Eyelet Demand	Yes		
G-18	Environment	Pb-free Soldering		Yes		
		Parts Specificat		Yes		

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF ANODE CAP

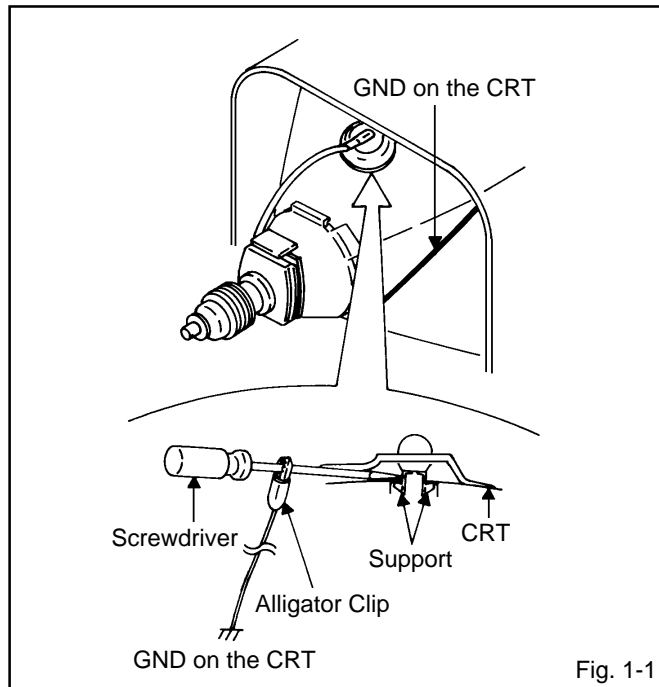
Read the following **NOTED** items before starting work.

- * After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
- * Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

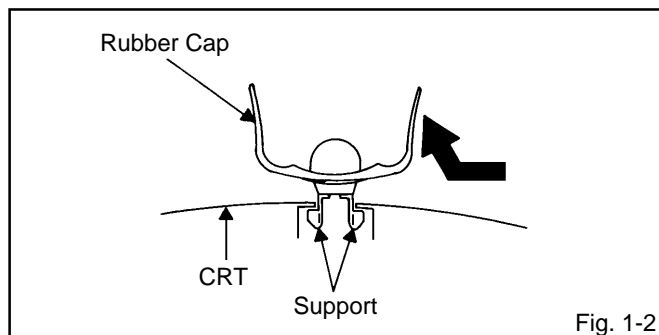
REMOVAL

1. Follow the steps as follows to discharge the Anode Cap.
(Refer to Fig. 1-1.)

Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground. While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver. A cracking noise will be heard as the voltage is discharged.



2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support.
(Refer to Fig. 1-2.)



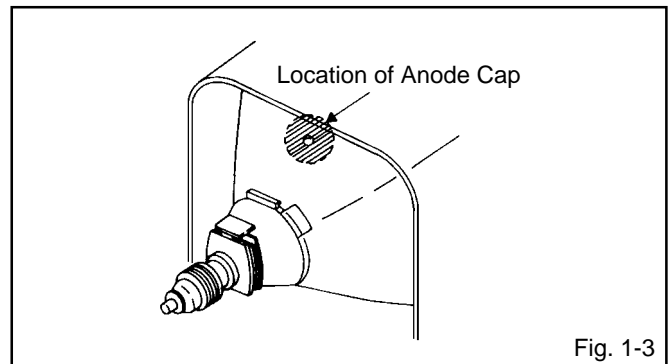
3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

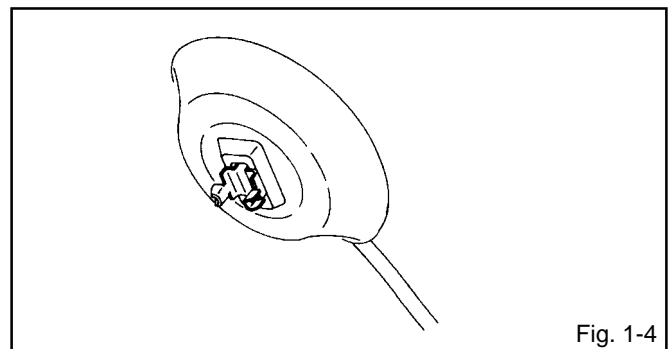
1. Clean the spot where the cap was located with a small amount of alcohol. (Refer to Fig. 1-3.)



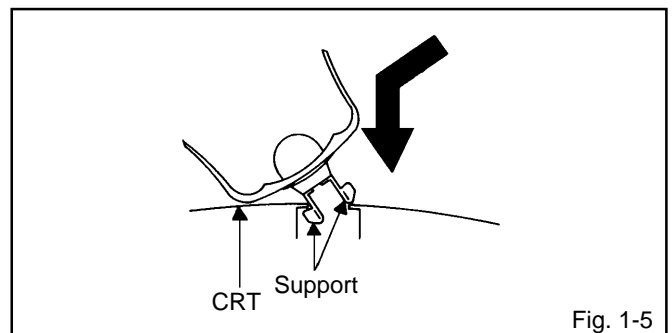
NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. (Refer to Fig. 1-4.)



4. Insert one end of the Anode Support into the anode button, then the other as shown in Fig. 1-5.



5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

DISASSEMBLY INSTRUCTIONS

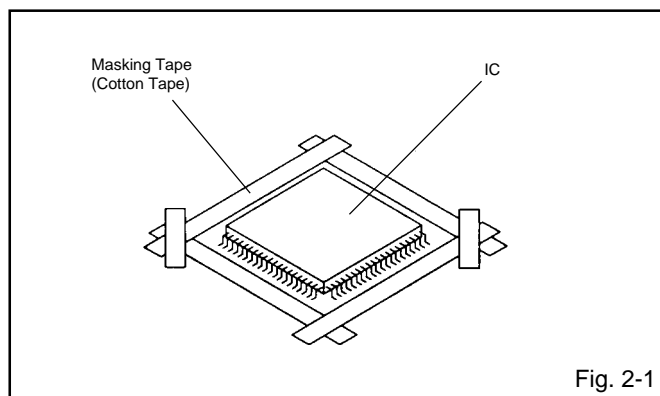
2. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. (Refer to Fig. 2-1.)

NOTE

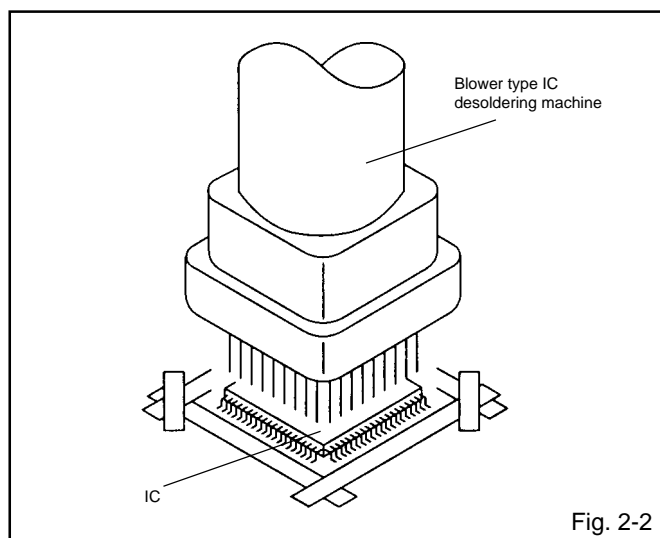
Masking is carried out on all the parts located within 10 mm distance from IC leads.



2. Heat the IC leads using a blower type IC desoldering machine. (Refer to Fig. 2-2.)

NOTE

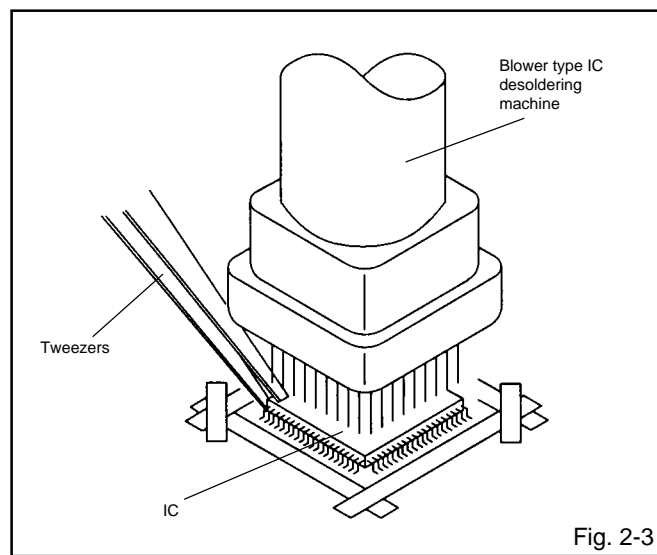
Do not rotate or move the IC back and forth, until IC can move back and forth easily after desoldering the leads completely.



3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. (Refer to Fig. 2-3.)

NOTE

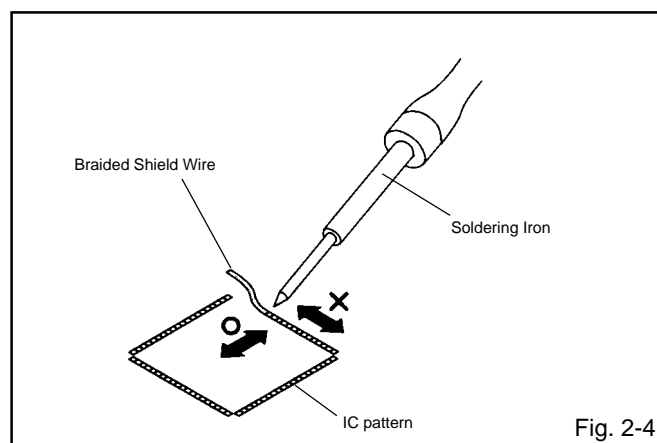
Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.



4. Peel off the Masking Tape.
5. Absorb the solder left on the pattern using the Braided Shield Wire. (Refer to Fig. 2-4.)

NOTE

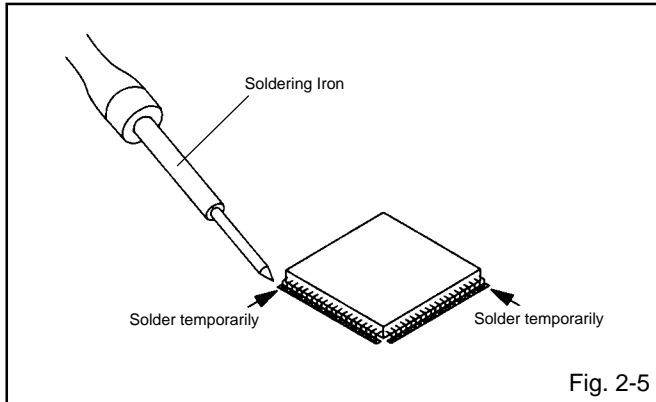
Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.



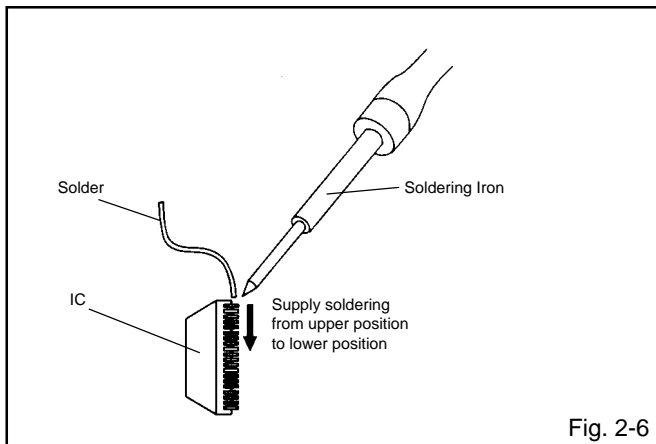
DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. (Refer to Fig. 2-5.)



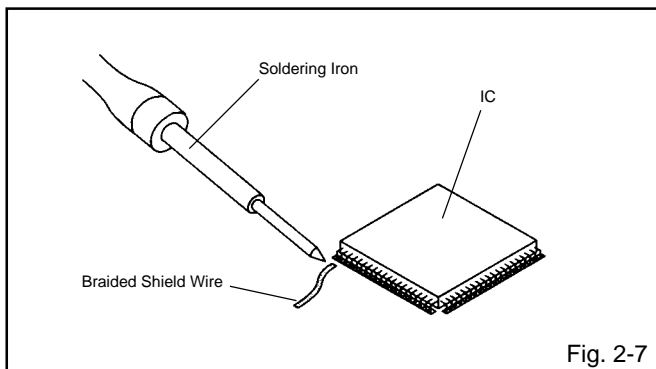
2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. (Refer to Fig. 2-6.)



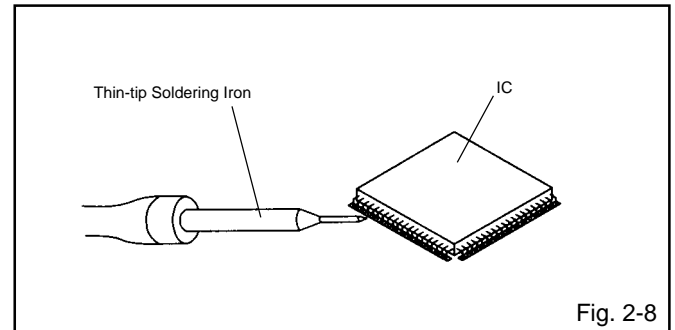
3. Absorb the solder left on the lead using the Braided Shield Wire. (Refer to Fig. 2-7.)

NOTE

Do not absorb the solder to excess.



4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. (Refer to Fig. 2-8.)



5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass. Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

NOTE

When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, always be sure to replace the IC in this case.

SERVICE MODE LIST

This unit is provided with the following SERVICE MODES so you can repair, examine and adjust easily.
To enter to the Service Mode, press both set key and remote control key for more than 2 seconds.

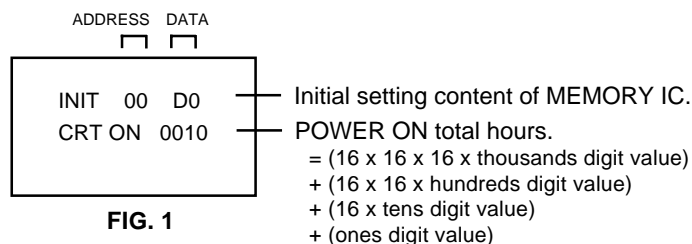
Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Releasing of V-CHIP PASSWORD.
VOL. (-) MIN	1	Initialization of factory data. NOTE: Do not use this for normal servicing. If you set factory initialization, the memories are reset such as the channel setting, and the POWER ON total hours.
VOL. (-) MIN	6	POWER ON total hours is displayed on the screen. Refer to the "CONFIRMATION OF HOURS USED". Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

CONFIRMATION OF HOURS USED

POWER ON total hours can be checked on the screen. Total hours are displayed in 16 system of notation.

NOTE: If you set factory initialization, the total hours is reset to "0".

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button (6) on the remote control for more than 2 seconds.
3. After the confirmation of using hours, turn off the power.



WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	D0	04	EB	4E	47	B3	24	69	*1	00	00	05	90	D6	00	07

*1

INI	USA	CANADA
08	39	38

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. While holding down VOLUME button on front cabinet, press key (6) on remote control for more than 2 seconds.
ADDRESS and DATA should appear as FIG 1.
3. ADDRESS is now selected and should "blink". Using the VOL. +/- button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using VOL. +/- button until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.
After the data input, set to the initializing of shipping.
9. Turn POWER on.
10. While holding down VOLUME button on front cabinet, press key (1) on remote control for more than 2 seconds.
11. After the finishing of the initializing of shipping, the unit will turn off automatically.
The unit will now have the correct DATA for the new MEMORY IC.

ELECTRICAL ADJUSTMENTS

1. BEFORE MAKING ELECTRICAL ADJUSTMENTS

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
- When you exchange IC and Transistor with a heat sink, apply silicon grease on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor.)

Prepare the following measurement tools for electrical adjustments.

1. Synchro Scope
2. Digital Voltmeter

On-Screen Display Adjustment

1. In the condition of NO indication on the screen. Press the VOL. DOWN button on the set and the Channel button (9) on the remote control for more than 2 seconds to appear the adjustment mode on the screen as shown in **Fig. 1-1**.

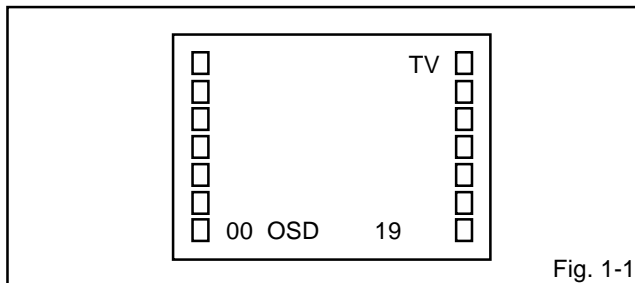


Fig. 1-1

2. Use the Channel UP/DOWN button or Channel button (0-9) on the remote control to select the options shown in **Fig. 1-2**.
3. Press the MENU button on the remote control to end the adjustments.

NO.	FUNCTION	NO.	FUNCTION
00	OSD H	16	CONTRAST CENT
01	CUT OFF	17	CONTRAST MAX
04	H.VCO	18	CONTRAST MIN
05	H.PHASE	19	COLOR CENT
06	V.SIZE	20	COLOR MAX
07	V.SHIFT	21	COLOR MIN
08	R.DRIVE	22	TINT
09	B.DRIVE	23	SHARPNESS
10	R.BIAS	24	FM LEVEL
11	G.BIAS	25	LEVEL
12	B.BIAS	26	SEPARATION 1
13	BRIGHT CENT	27	SEPARATION 2
14	BRIGHT MAX	28	TEST MONO
15	BRIGHT MIN	29	TEST STEREO

Fig. 1-2

2. BASIC ADJUSTMENTS

2-1: CUT OFF

1. Adjust the unit to the following settings.
R.DRIVE=10, B.DRIVE=10, R.BIAS=64, G.BIAS=64, B.BIAS=64, BRI.CENT=120, CONT.MAX=40.
2. Place the set in Aging Test for more than 15 minutes.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (01) on the remote control to select "CUT OFF".
4. Adjust the **Screen Volume** until a dim raster is obtained.

2-2: FOCUS

1. Receive the monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

2-3: WHITE BALANCE

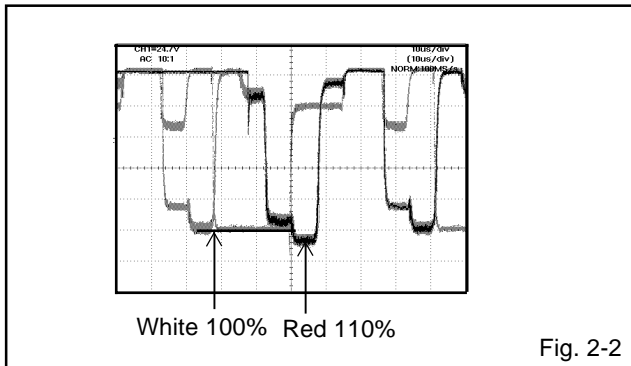
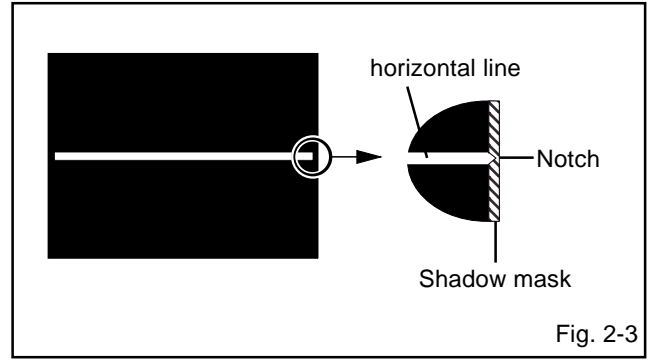
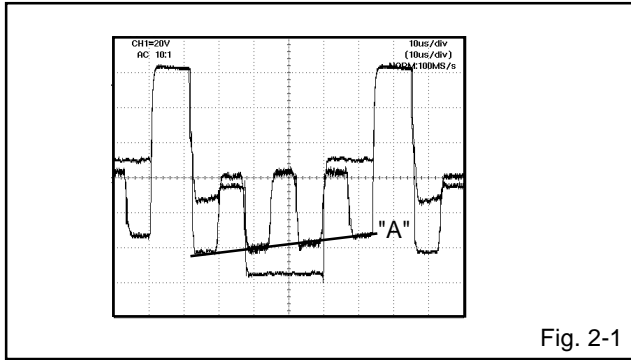
NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set in Aging Test for more than 10 minutes.
2. Receive the white 100% signal from the Pattern Generator.
3. Using the adjustment control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (10) on the remote control to select "R.BIAS".
5. Using the VOL. UP/DOWN button on the remote control, adjust the R.BIAS.
6. Press the CH. UP/DOWN button on the remote control to select the "R.DRIVE", "B.DRIVE", "G.BIAS" or "B.BIAS".
7. Using the VOL. UP/DOWN button on the remote control, adjust the R.DRIVE, B.DRIVE, G.BIAS or B.BIAS.
8. Perform the above adjustments 6 and 7 until the white color is achieved.

2-4: SUB TINT/SUB COLOR

1. Receive the color bar pattern. (RF Input)
2. Connect the oscilloscope to **TP023**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (22) on the remote control to select "TINT".
4. Press the VOL. UP/DOWN button on the remote control until the section "A" becomes as straight line.
(Refer to **Fig. 2-1**)
5. Connect the oscilloscope to **TP022**.
6. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (19) on the remote control to select "COL.CENT".
7. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to $110 \pm 10\%$ of the white level. (Refer to **Fig. 2-2**)
8. Receive the color bar pattern. (Audio Video Input)
9. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 2~7.

ELECTRICAL ADJUSTMENTS



2-5: HORIZONTAL PHASE

1. Receive the monoscope pattern.
2. Using the adjustment control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(05)** on the remote control to select "H.PHAS".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

2-6: VERTICAL SIZE

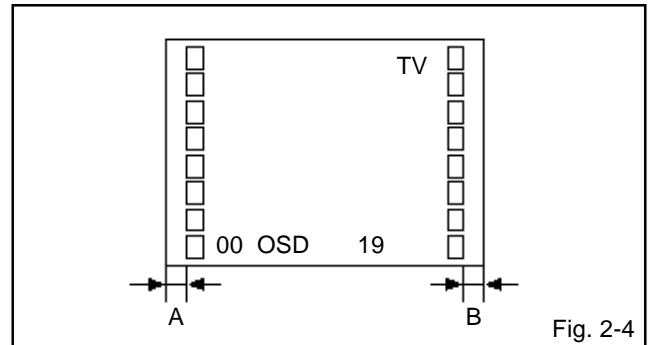
1. Receive the monoscope Pattern.
2. Using the adjustment control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(06)** on the remote control to select "V.SIZE".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes $10 \pm 2\%$.

2-7: VERTICAL SHIFT

1. Receive the monoscope Pattern.
2. Using the adjustment control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(07)** on the remote control to select "V.SFT".
4. Press the VOL. UP/DOWN button on the remote control until the horizontal line becomes fit to the notch of the shadow mask. (Refer to **Fig. 2-3**)

2-8: OSD HORIZONTAL

1. Activate the adjustment mode display of **Fig. 1-1**.
2. Press the VOL. UP/DOWN button on the remote control until the difference of A and B becomes minimum. (Refer to **Fig. 2-4**)



2-9: BRIGHT MANUAL

1. Receive the monoscope pattern.(RF Input)
2. Using the adjustment control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(13)** on the remote control to select "BRI.CENT".
4. Press the VOL.UP/DOWN button on the remote control until the white 10% is starting to be visible.
5. Press the TV/VIDEO button on the remote to set to the AV mode. Then perform the above adjustment 2~4.

2-10: SUB CONTRAST

1. Receive an 70dB the color bar pattern.
2. Activate the adjustment mode display of **Fig. 1-1** press the channel button **(17)** on the remote control to select "CONT.MAX".
3. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "43".
4. Press the TV/VIDEO button on the remote control to set to the AV mode.
5. Activate the adjustment mode display of **Fig. 1-1** press the channel button **(17)** on the remote control to select "CONT.MAX".
6. Press the VOL.UP/DOWN button on the remote control until the contrast step No. becomes "52".
7. Receive a broadcast and check if the picture is normal.

ELECTRICAL ADJUSTMENTS

2-11: Confirmation of Fixed Value (step No.)

Please check if the fixed values of the each adjustment items are set correctly referring below. (RF/AV)

NO.	FUNCTION	STEP NO.	NO.	FUNCTION	STEP NO.
04	H VCO	04	21	COLOR MIN	00
14	BRIGHT MAX	140	23	SHARPNESS	53
15	BRIGHT MIN	60	24	FM LEVEL	00
16	CONT CENT	30	25	LEVEL	00
18	CONT MIN	15	26	SEPARATION 1	00
20	COLOR MAX	74	27	SEPARATION 2	00

ELECTRICAL ADJUSTMENTS

3. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**
If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

3-2: PURITY

NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

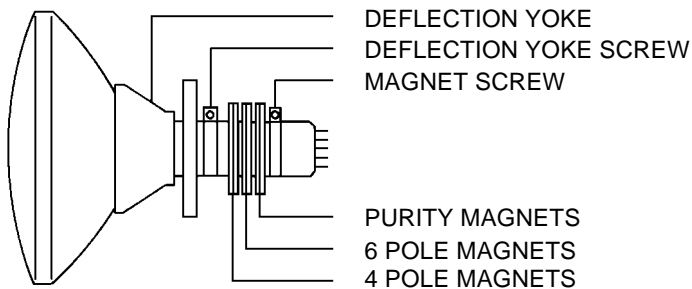


Fig. 3-1

3-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-2.

1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

3-4: DYNAMIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 3-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 3-2-b)**

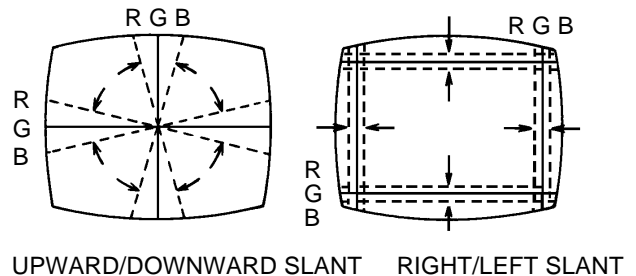


Fig. 3-2-a

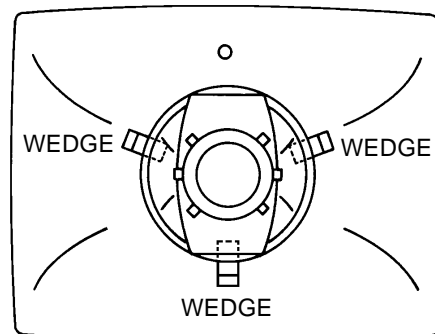
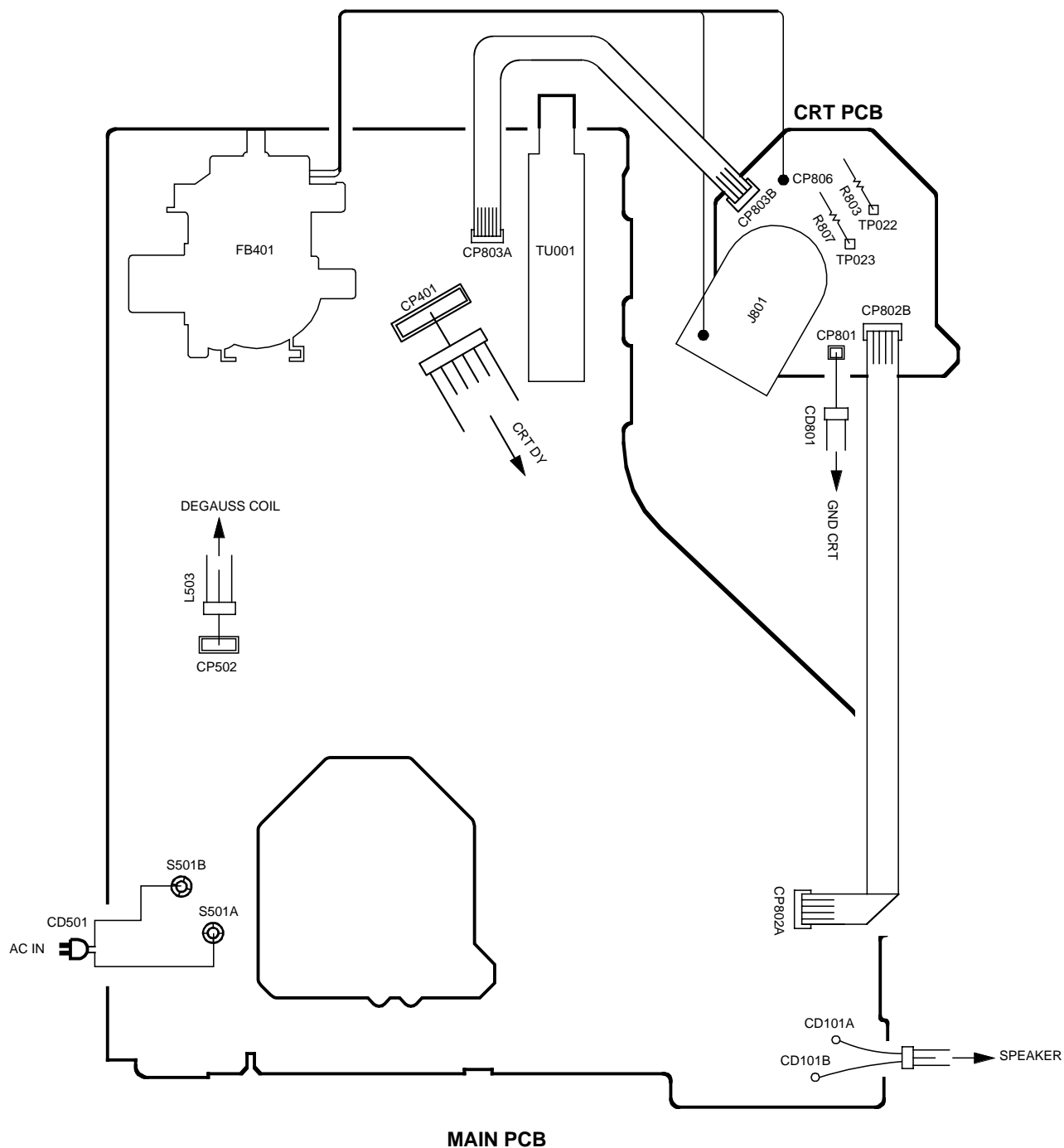


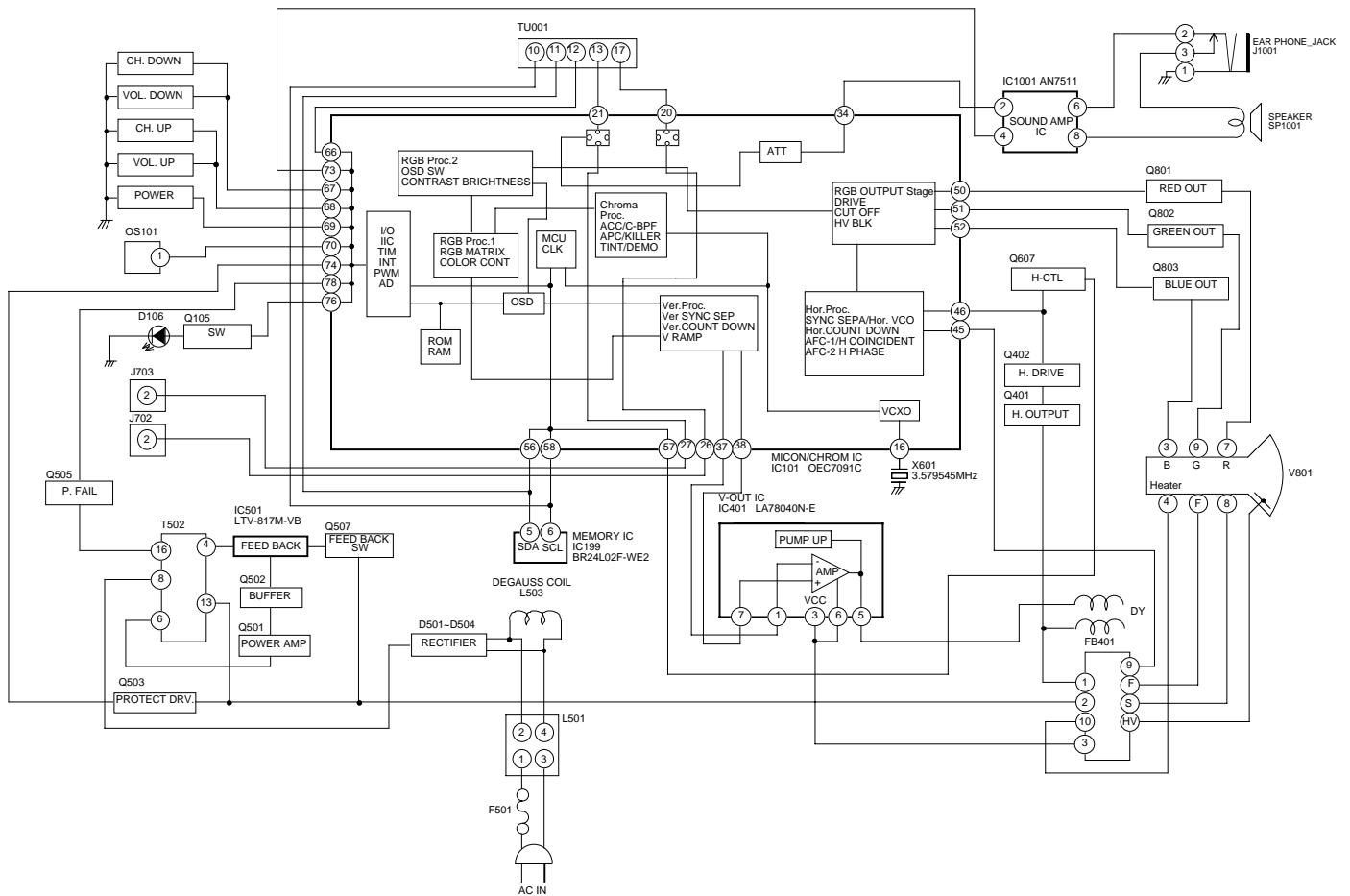
Fig. 3-2-b

ELECTRICAL ADJUSTMENTS

4. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)

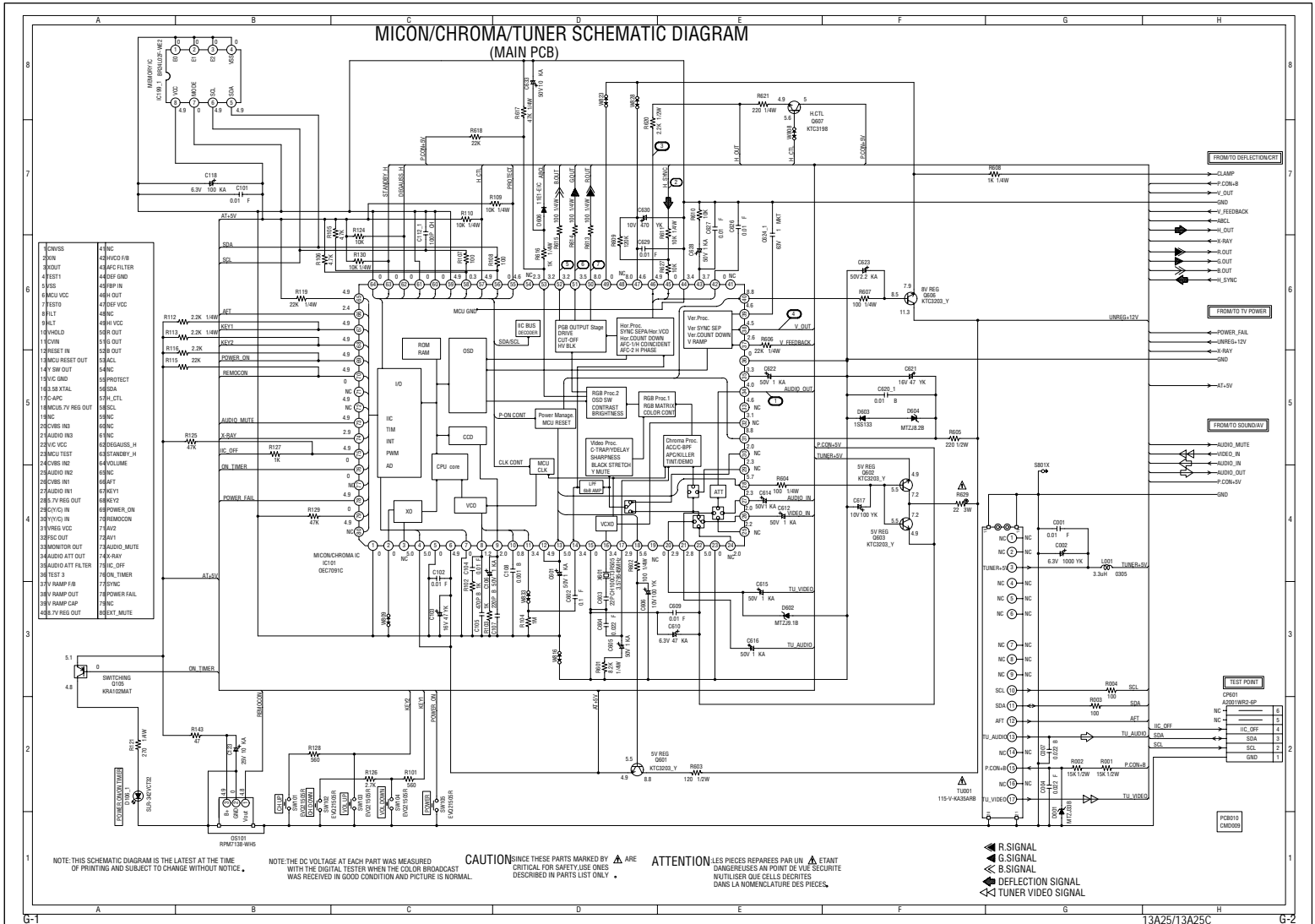


BLOCK DIAGRAM



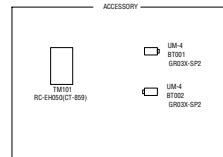
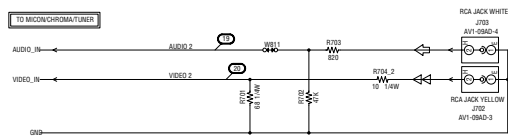
This image shows a detailed grayscale layout of a printed circuit board (PCB). The board is populated with numerous components, including integrated circuits (ICs), capacitors, and resistors, each labeled with a part number. A large, irregularly shaped cutout is visible in the upper left quadrant. The board is labeled "CMD009 A" in the bottom right corner.

MICON/CHROMA/TUNER SCHEMATIC DIAGRAM (MAIN PCB)



13A25/13A25C

SOUND/AV SCHEMATIC DIAGRAM (MAIN PCB)



FROM TV POWER

SOUND_GND

GND

FROM MICONCHROMATUNER

AUDIO_MUTE

P.CONV.CP

GND

AUDIO_OUT

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ, N'UTILISER QUE CELLES DÉCRITES DANS LA NOMÉNCLATURE DES PIÈCES.

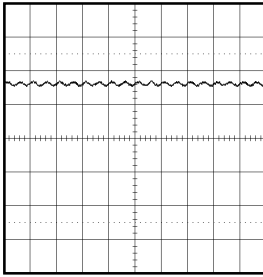
TUNER VIDEO SIGNAL
 AUDIO SIGNAL

PCB1010
CM0009

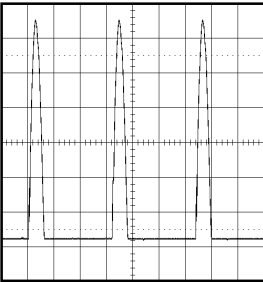
13A25/13A25C

WAVEFORMS

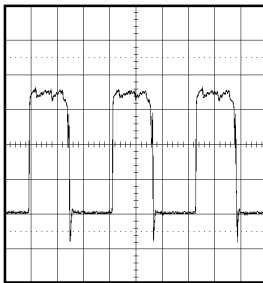
MICON/CHROMA/TUNER



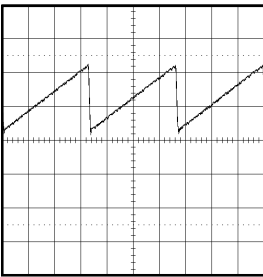
① 0.5V 2ms/div



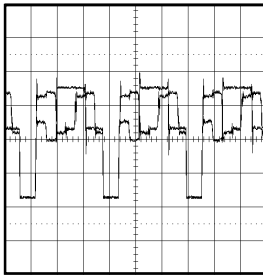
② 20V 20μs/div



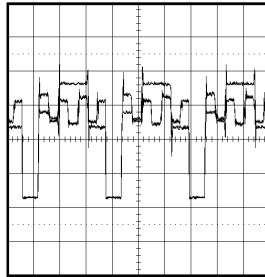
③ 200mV 20μs/div



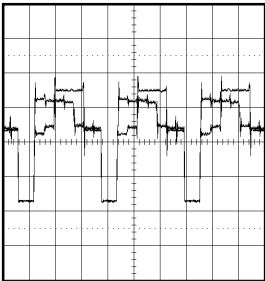
④ 0.5V 5ms/div



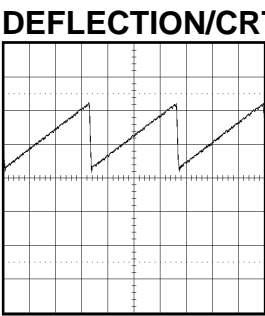
⑤ 1V 20μs/div



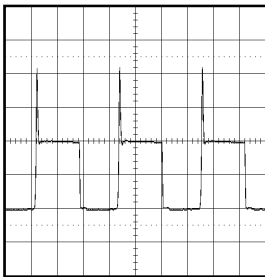
⑥ 1V 20μs/div



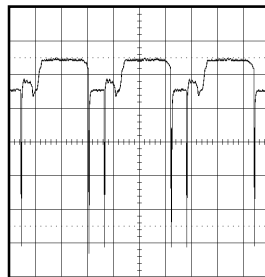
⑦ 1V 20μs/div



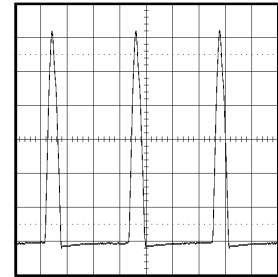
⑧ 0.5V 5ms/div



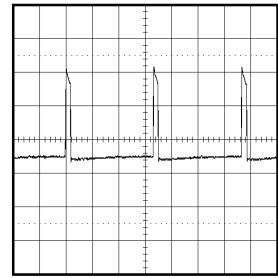
⑨ 20V 20μs/div



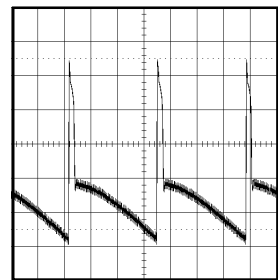
⑩ 2V 20μs/div



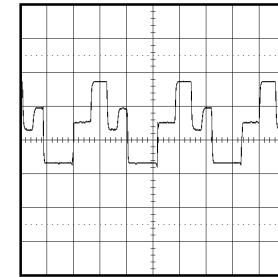
⑪ 200V 20μs/div



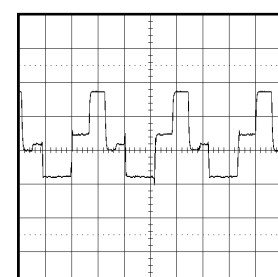
⑫ 10V 5ms/div



⑬ 10V 5ms/div



⑭ 50V 20μs/div

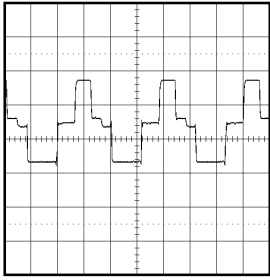


⑮ 50V 20μs/div

DEFLECTION/CRT

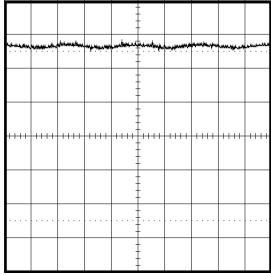
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

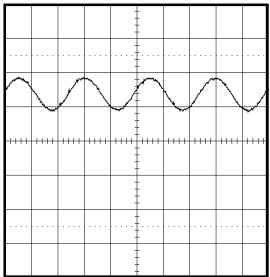


①⑥ 50V 20 μ s/div

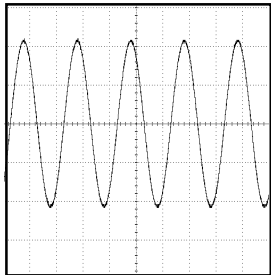
SOUND/AV



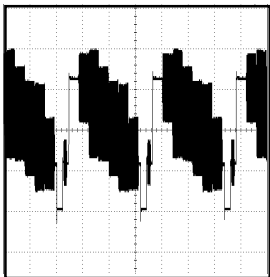
①⑦ 0.5V 1ms/div



①⑧ 1V 1ms/div



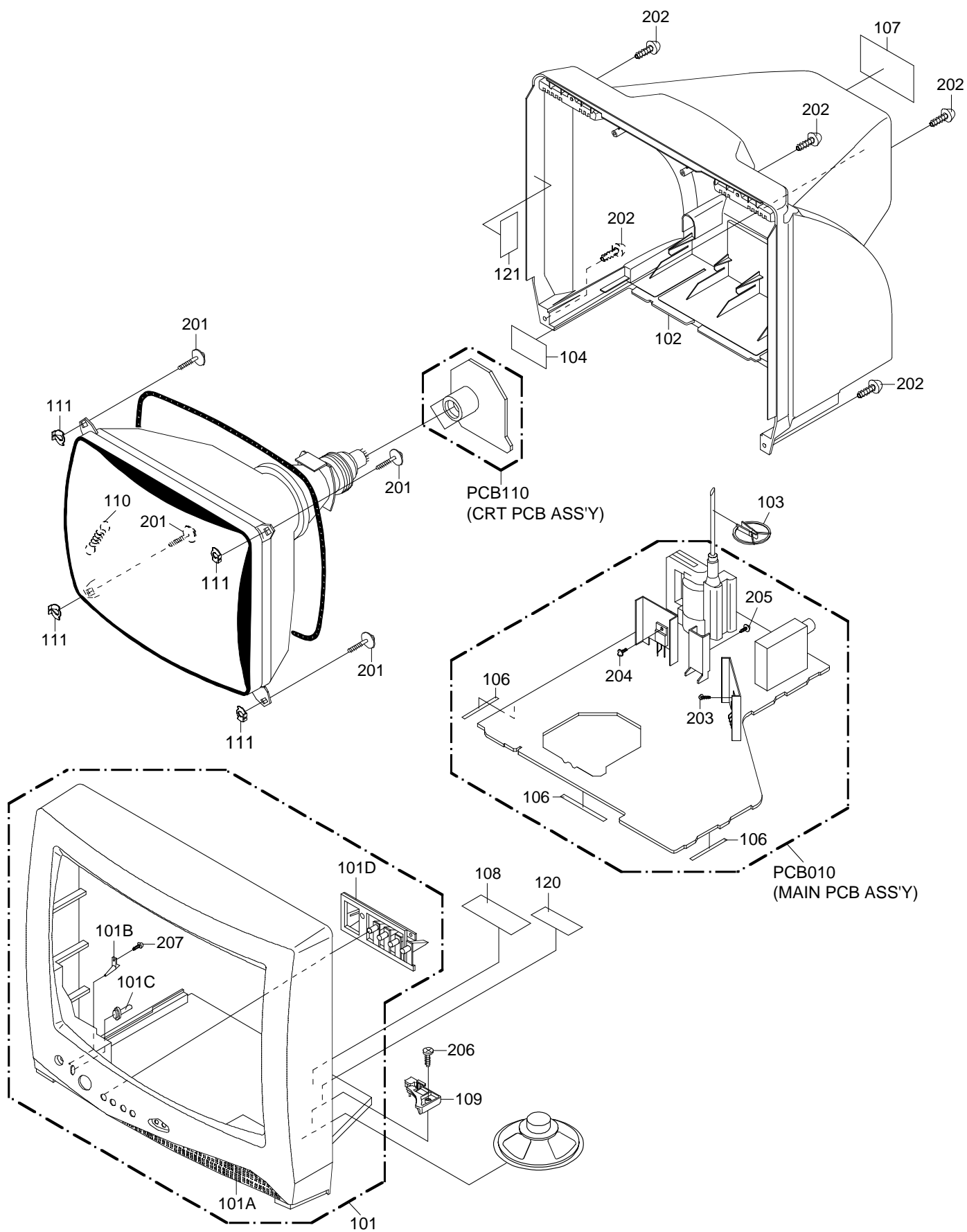
①⑨ 200mV 500 μ s/div



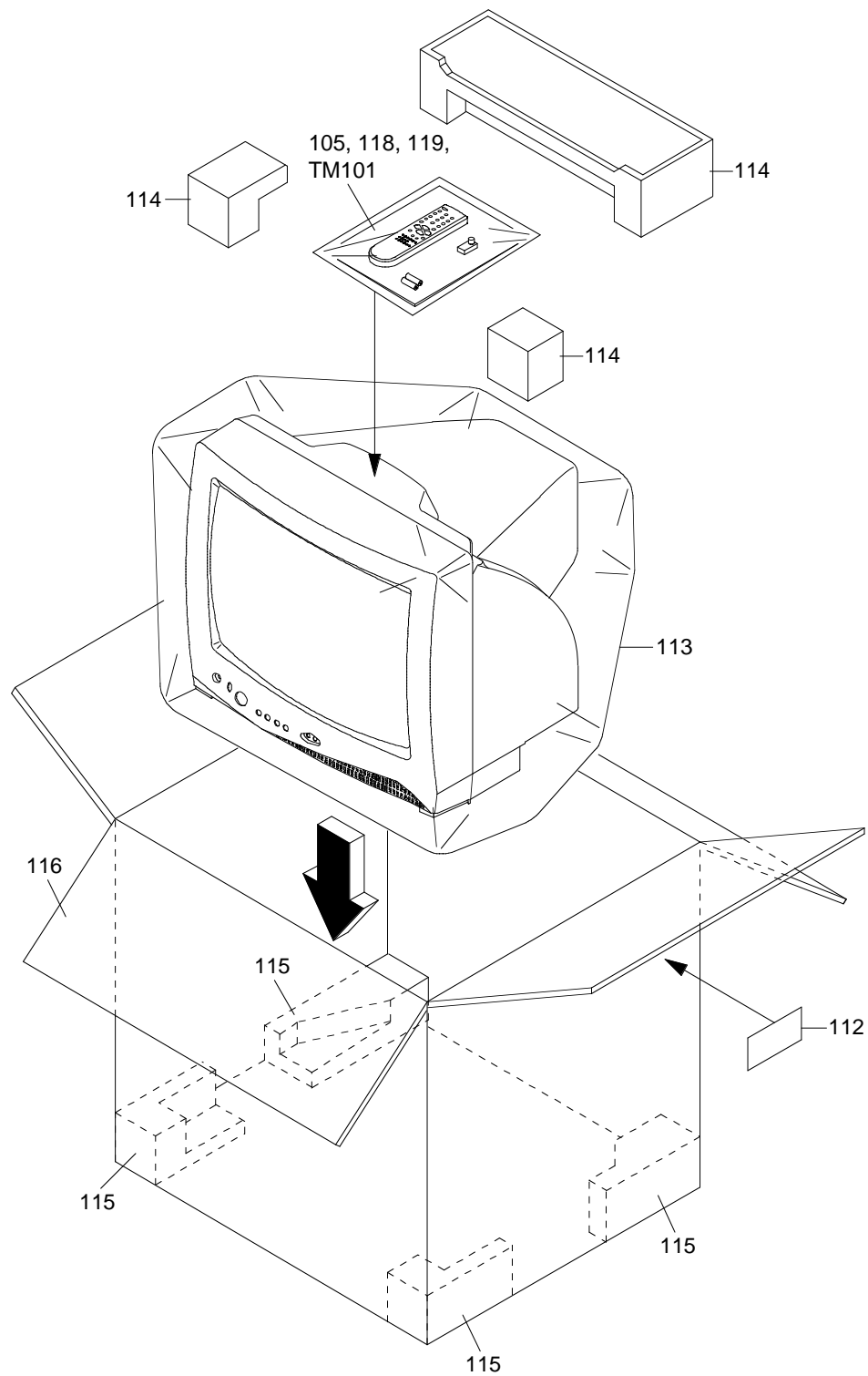
②⑩ 500mV 20 μ s/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

MECHANICAL EXPLODED VIEW



MECHANICAL EXPLODED VIEW (PACKING DIAGRAM)



MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
101	AE006001	7A701A312A	FRONT CABI ASS'Y	
101A	AE005701	701WPJC918	CABINET,FRONT	
101B	AE005702	713WPAA203	GLASS,LED	
101C	AE005703	713WPAA202	GUIDE,REMOCON	
101D	AE005704	735WPBB315	BUTTON,FRAME	
102	AE006002	A3M131X740	CABINET,BACK ASS'Y	
103	BZ710260	899HV3T000	HOLDER,ANODE WIRE	
104	AE007109	726000A101	SHEET,CRT SERVICEMAN	
105	AE005707	J3M13121A	INSTRUCTION BOOK(E/S)	
106	AE000535	800WQ0A024	FELT SHEET	
107	AE005708	722549A412	SHEET,RATING	
108	AE005650	723000C727	SHEET,CAUTION	
109	AE005709	735WPAA837	SPEAKER HOLDER	
110	BZ710660	741WUA0021	SPRING,EARTH	
111	AE005971	769WSAA012	WASHER CRT T=0.5	
112	AE007110	723000C835	SHEET,BARCODE	
113	AE005712	791WHAA122	FILM BAG	
114	AD300809	792WHAA052	PACKAGE,TOP	
115	AD300810	792WHAA053	PACKAGE,BOTTOM	
116	AE005713	793WCDC593	GIFT BOX	
117	AE005714	A3M131V975	INSTRUCTION BOOK KIT	
118	AE005715	JB5KD200	POLYBAG,INSTRUCTION(RED CAUTION)	
119	AE004983	J2D60117A	REGISTRATION CARD	
201	AE005716	8121J50B5U	SCREW,TAP TITE(P) GW20	5x28
202	AE004847	8117540A6U	SCREW,TAP TITE(B0) TRUSS	4x16
203	AE003531	810763080U	SCREW,TAP TITE(S) BRAZIER	3x8
204	AE005717	8109I3060U	SCREW,TAP TITE(B) WH7	3x6
205	AE005659	8109I3080U	SCREW,TAP TITE(B) WH7	3x8
206	AE003528	8110630A0U	SCREW,TAP TITE(P) BRAZIER	3x10
207	AE003529	811063080U	SCREW,TAP TITE(P) BRAZIER	3x8

MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
101	AE006001	7A701A312A	FRONT CABI ASS'Y	
101A	AE005701	701WPJC918	CABINET,FRONT	
101B	AE005702	713WPAA203	GLASS,LED	
101C	AE005703	713WPAA202	GUIDE,REMOCON	
101D	AE005704	735WPBB315	BUTTON,FRAME	
102	AE007111	A3M132X740	CABINET,BACK ASS'Y	
103	BZ710260	899HV3T000	HOLDER,ANODE WIRE	
104	AE007109	726000A101	SHEET,CRT SERVICEMAN	
105	AE007112	J3M13221A	INSTRUCTION BOOK	
106	AE000535	800WQ0A024	FELT SHEET	
107	AE007113	722549A440	SHEET,RATING	
108	AE006290	723000C728	SHEET,CAUTION	
109	AE005709	735WPAA837	SPEAKER HOLDER	
110	BZ710660	741WUA0021	SPRING,EARTH	
111	AE005971	769WSAA012	WASHER CRT T=0.5	
112	AE007114	723000C853	SHEET,BARCODE	
113	AE005712	791WHAA122	FILM BAG	
114	AD300809	792WHAA052	PACKAGE,TOP	
115	AD300810	792WHAA053	PACKAGE,BOTTOM	
116	AE007115	793WCDC661	GIFT BOX	
117	AE007116	A3M132X975	INSTRUCTION BOOK KIT	
118	AE007117	JB5KD100	POLYBAG,INSTRUCTION(RED CAUTION)	
120	AE000091	722000A023	SHEET,HWC	
121	AE006166	722000A267	SHEET,CSA WARNING	
201	AE005716	8121J50B5U	SCREW,TAP TITE(P) GW20	5x28
202	AE004847	8117540A6U	SCREW,TAP TITE(B0) TRUSS	4x16
203	AE003531	810763080U	SCREW,TAP TITE(S) BRAZIER	3x8
204	AE005717	8109I3060U	SCREW,TAP TITE(B) WH7	3x6
205	AE005659	8109I3080U	SCREW,TAP TITE(B) WH7	3x8
206	AE003528	8110630A0U	SCREW,TAP TITE(P) BRAZIER	3x10
207	AE003529	811063080U	SCREW,TAP TITE(P) BRAZIER	3x8

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description
RESISTORS			
△ R401	AE005733	R4K1T4273F	R,METAL 2 27K OHM 1/4W
△ R404	AE004065	R615U2151J	R,FUSE 150 OHM 1/2W
△ R408	AE005732	R4K1T4103F	R,METAL 2 10K OHM 1/4W
△ R409	AE005733	R4K1T4273F	R,METAL 2 27K OHM 1/4W
△ R429	AE005699	R638814R7J	R,FUSE 4.7 OHM 1W
△ R447	AE005729	R3K58A151J	R,METAL OXIDE 150 OHM 2W
△ R500	BZ210080	R0G3K2275K	RC 2.7M OHM 1/2W
△ R501	AE000366	R5X2CD5R6J	R,CEMENT 5.6 OHM 5W
△ R508	AE005727	R3K581221J	R,METAL OXIDE 220 OHM 1W
R509	BZ210135	R002T4221J	RC 220 OHM 1/4W
R510	AE003327	R00202335J	RC 3.3M OHM 1/2W
△ R514	AE005735	R63881R22J	R,FUSE 0.22 OHM 1W
R515	BZ210081	R002T2124J	RC 120K OHM 1/2W
△ R517	AE005726	R3K581010J	R,METAL OXIDE 1 OHM 1W
△ R518	AE005734	R4K1T4562F	R,METAL 5.6K OHM 1/4W
△ R519	BZ210124	R002T4122J	RC 1.2K OHM 1/4W
△ R525	AE005730	R3K58A1R5J	R,METAL OXIDE 1.5 OHM 2W
△ R538	BZ210206	R002T2155J	RC 1.5M OHM 1/2W
△ R542	AE005728	R3K581R68J	R,METAL OXIDE 0.68 OHM 1W
△ R629	AE005731	R3K58B220J	R,METAL OXIDE 22 OHM 3W
△ R803	AE005689	R3K581153J	R,METAL OXIDE 15K OHM 1W
△ R805	AE005689	R3K581153J	R,METAL OXIDE 15K OHM 1W
△ R807	AE005689	R3K581153J	R,METAL OXIDE 15K OHM 1W
CAPACITORS			
△ C403	BZ110149	E02LT4471M	CE 470 UF 35V
△ C414	AD301434	E02LU4101M	CE 100 UF 35V
△ C418	BZ110041	E02LT3471M	CE 470 UF 25V
C420	BZ110203	C0PLRR7W2K	CC 820 PF 2KV RR
△ C434	BZ110195	E02LU8220M	CE 22 UF 100V
C437	BZ210173	P4J7F3474J	CMPP 0.47 UF 250V PMS
△ C443	AE001322	P4N8FJ842H	CMPP 0.0084UF 1.25KV
C446	BZ110205	E02LU5220M	CE 22 UF 50V
△ C448	BZ110204	E0ELFD220M	CE 22 UF 250V
C503	BZ110061	C0JTB0513K	CC 0.001 UF 500V B
△ C505	BZ110025	P2122B224M	CMP 0.22 UF 275V ECQUL
△ C506	AD301026	CD39E0M13M	CC 0.001 UF 250V
△ C508	AE002878	CD39E0MQ3M	CC 0.0047UF 250V
C514	BZ110203	C0PLRR7W2K	CC 820 PF 2KV RR
△ C515	BZ110135	E02L02222M	CE 2200 UF 16V
C517	BZ110203	C0PLRR7W2K	CC 820 PF 2KV RR
△ C519	BZ110207	E02LT2102M	CE 1000 UF 16V
△ C521	BZ110092	E5EZFB101M	CE 100 UF 160V
△ C526	BZ110089	E02LFC221M	CE 220 UF 200V
C819	BZ110247	C0JBB0713K	CC 0.001 UF 2KV B
DIODES			
D001	BZ410037	D97U03301B	DIODE,ZENER MTZJ33B T-77
D106	BZ410054	0021721150	LED SLR-342VCT32
D403	BZ410043	D2WT011E10	DIODE,SILICON 11E1-EIC
D404	BZ410066	D97U06R21B	DIODE,ZENER MTZJ6.2B T-77
△ D405	BZ410063	D2WTAU02A0	DIODE,SILICON AU02A-EIC
△ D406	BZ410043	D2WT011E10	DIODE,SILICON 11E1-EIC
D408	BZ410043	D2WT011E10	DIODE,SILICON 11E1-EIC
D409	BZ410043	D2WT011E10	DIODE,SILICON 11E1-EIC
△ D410	BZ410063	D2WTAU02A0	DIODE,SILICON AU02A-EIC
△ D411	BZ410063	D2WTAU02A0	DIODE,SILICON AU02A-EIC
△ D412	BZ410020	D97U05R11B	DIODE,ZENER MTZJ5.1B T-77
△ D501	BZ410085	D2WXN40050	DIODE,SILICON 1N4005-EIC
△ D502	BZ410085	D2WXN40050	DIODE,SILICON 1N4005-EIC
△ D503	BZ410085	D2WXN40050	DIODE,SILICON 1N4005-EIC
△ D504	BZ410085	D2WXN40050	DIODE,SILICON 1N4005-EIC
△ D505	BZ410010	D28T21DQN9	DIODE,SCHOTTKY 21DQ09N-TA2B1
D506	AD300671	D97U01801B	DIODE,ZENER MTZJ18B T-77
D508	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
△ D509	AD300671	D97U01801B	DIODE,ZENER MTZJ18B T-77
△ D510	BZ410080	D2WXR02AM0	DIODE,SILICON RU2AM-EIC
D511	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
△ D512	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
△ D513	BZ410010	D28T21DQN9	DIODE,SCHOTTKY 21DQ09N-TA2B1
D514	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D515	AD300731	D2WXN49370	DIODE,SILICON 1N4937
△ D516	AD300731	D2WXN49370	DIODE,SILICON 1N4937

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description
DIODES			
D521	BZ410022	D97U06R81B	DIODE,ZENER
D522	BZ410006	D1VT001330	DIODE,SILICON
D528	BZ410021	D97U05R61B	DIODE,ZENER
D602	BZ410023	D97U09R11B	DIODE,ZENER
D603	BZ410006	D1VT001330	DIODE,SILICON
D604	BZ410058	D97U08R21B	DIODE,ZENER
D606	BZ410043	D2WT011E10	DIODE,SILICON
ICS			
IC101	AE005644	I56F07091C	IC
IC199	AE005724	A3M131V015	INIT DATA
△IC401	AE002783	I03TD804N0	IC
△IC501	BZ410088	0002E00610	PHOTO COUPLER
IC1001	BZ611001	I01DP75110	IC
TRANSISTORS			
Q105	BZ510086	TPATB03003	COMPOUND TRANSISTOR
△Q401	AE000656	TC1G058850	TRANSISTOR,SILICON
△Q402	BZ510089	TC5T01627Y	TRANSISTOR,SILICON
△Q501	AE002251	T25F035630	FET
△Q502	BZ510069	TCATC31980	TRANSISTOR,SILICON
△Q503	BZ510004	TA3T016240	TRANSISTOR,SILICON
Q505	BZ510073	TAATA12660	TRANSISTOR,SILICON
Q507	BZ510069	TCATC31980	TRANSISTOR,SILICON
Q601	BZ510070	TCAT032034	TRANSISTOR,SILICON
Q602	BZ510070	TCAT032034	TRANSISTOR,SILICON
Q603	BZ510070	TCAT032034	TRANSISTOR,SILICON
Q606	BZ510070	TCAT032034	TRANSISTOR,SILICON
Q607	BZ510069	TCATC31980	TRANSISTOR,SILICON
△Q801	AD300794	TCKT1473A0	TRANSISTOR,SILICON
△Q802	AD300794	TCKT1473A0	TRANSISTOR,SILICON
△Q803	AD300794	TCKT1473A0	TRANSISTOR,SILICON
COILS & TRANSFORMERS			
L001	AE000290	02167F3R3J	COIL
L401	AD301644	021L75472J	COIL
△L501	AE005719	0293000130	COIL,LINE FILTER
△L503	AE005718	028B140033	COIL,DEGAUSS
L801	BZ310113	021673221K	COIL
T401	BZ310157	045009003J	TRANS,HORIZONTAL DRIVE
△T502	AD302162	0481291084	TRANSFORMER,SWITCHING
JACKS			
J702	AE005633	060Q401112	RCA JACK
J703	AE005632	060Q401111	RCA JACK
△J801	BZ614434	066F120018	SOCKET,CATHODE RAY TUBE
△J1001	AD302163	060J121014	JACK,RCA,3.5
SWITCHES			
SW101	BZ612010	0504101T34	SWITCH,TACT
SW102	BZ612010	0504101T34	SWITCH,TACT
SW103	BZ612010	0504101T34	SWITCH,TACT
SW104	BZ612010	0504101T34	SWITCH,TACT
SW105	BZ612010	0504101T34	SWITCH,TACT
P.C.BOARD ASSEMBLIES			
PCB010	AE005723	A3M131V010	PCB ASS'Y
PCB110	AE005725	A3M131V110	PCB ASS'Y
MISCELLANEOUS			
B501	BZ310121	024HT03553	CORE,BEADS
B504	BZ310121	024HT03553	CORE,BEADS
BT001	AE005640	141R004016	BATTERY,MANGAN
BT002	AE005640	141R004016	BATTERY,MANGAN
△CD501	AE005639	1209414909	CORD,AC BUSH
△CP401	BZ614303	069S450089	CONNECTOR PCB SIDE
△CP502	BZ614283	069S420110	CONNECTOR PCB SIDE
CP503	BZ614016	069W01001A	CONNECTOR PCB SIDE
CP601	AE005634	069S260639	CONNECTOR PCB SIDE
CP801	AE007181	069W010340	CONNECTOR PCB SIDE
CD101A	AE005720	06C3012004	CORD,CONNECTOR
CD101B	AE005721	06C3012005	CORD,CONNECTOR
CP802A	BZ614276	067U005049	WIRE HOLDER
CP802B	BZ614276	067U005049	WIRE HOLDER
CP803A	BZ614334	067U004029	WIRE HOLDER
CP803B	BZ614334	067U004029	WIRE HOLDER
EL001	BZ614043	124116281A	EYE LET
EL002	BZ614044	124120301A	EYE LET

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
MISCELLANEOUS				
△F501	AD302166	081PC04005	FUSE	51MS040L
△FB401	AE003330	043214050F	TRANSFORMER,FLYBACK	FN114B002_M
FH501	AE002634	06710T0009	HOLDER,FUSE	EYF-52BCY
FH502	AE002634	06710T0009	HOLDER,FUSE	EYF-52BCY
OS101	AD301048	0773071001	REMOTE RECEIVER	RPM7138-WH5
S101	AD302168	WBL6026038	FLAT CABLE	AWM2468 AWG26 4C BLACK 260MM
S102	BZ614371	WCL6834038	FLAT CABLE	AWM2468 AWG26 5C GRAY 340MM
△SP1001	AE005722	070Y132027	SPEAKER	S08F21A
△TH501	AD302000	D8EE0B1400	DEGAUSS ELEMENT	B59203-S1060-B14
TM101	AE003331	076N0EH050	TRANSMITTER	RC-EH050(CT-859)
△TU001	AE006069	0163300018	RF UNIT	115-V-KA35ARB
△V801	BZ614442	098Y1404C8	CRT W/DY	A34JXV70X73N45
X601	BZ613004	100CT3R505	CRYSTAL	HC-49/U
RESISTOR				
	RC.....	CARBON RESISTOR		
CAPACITORS				
	CC.....	CERAMIC CAPACITOR		
	CE.....	ALUMI ELECTROLYTIC CAPACITOR		
	CP.....	POLYESTER CAPACITOR		
	CPP.....	POLYPROPYLENE CAPACITOR		
	CPL.....	PLASTIC CAPACITOR		
	CMP.....	METAL POLYESTER CAPACITOR		
	CMPL.....	METAL PLASTIC CAPACITOR		
	CMPP.....	METAL POLYPROPYLENE CAPACITOR		

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description
RESISTORS			
△ R401	AE005733	R4K1T4273F	R,METAL 2 27K OHM 1/4W
△ R404	AE004065	R615U2151J	R,FUSE 150 OHM 1/2W
△ R408	AE005732	R4K1T4103F	R,METAL 2 10K OHM 1/4W
△ R409	AE005733	R4K1T4273F	R,METAL 2 27K OHM 1/4W
△ R429	AE005699	R638814R7J	R,FUSE 4.7 OHM 1W
△ R447	AE005729	R3K58A151J	R,METAL OXIDE 150 OHM 2W
△ R500	BZ210080	R0G3K2275K	RC 2.7M OHM 1/2W
△ R501	AE000366	R5X2CD5R6J	R,CEMENT 5.6 OHM 5W
△ R508	AE005727	R3K581221J	R,METAL OXIDE 220 OHM 1W
R509	BZ210135	R002T4221J	RC 220 OHM 1/4W
R510	AE003327	R00202335J	RC 3.3M OHM 1/2W
△ R514	AE005735	R63881R22J	R,FUSE 0.22 OHM 1W
R515	BZ210081	R002T2124J	RC 120K OHM 1/2W
△ R517	AE005726	R3K581010J	R,METAL OXIDE 1 OHM 1W
△ R518	AE005734	R4K1T4562F	R,METAL 5.6K OHM 1/4W
△ R519	BZ210124	R002T4122J	RC 1.2K OHM 1/4W
△ R525	AE005730	R3K58A1R5J	R,METAL OXIDE 1.5 OHM 2W
△ R538	BZ210206	R002T2155J	RC 1.5M OHM 1/2W
△ R542	AE005728	R3K581R68J	R,METAL OXIDE 0.68 OHM 1W
△ R629	AE005731	R3K58B220J	R,METAL OXIDE 22 OHM 3W
△ R803	AE005689	R3K581153J	R,METAL OXIDE 15K OHM 1W
△ R805	AE005689	R3K581153J	R,METAL OXIDE 15K OHM 1W
△ R807	AE005689	R3K581153J	R,METAL OXIDE 15K OHM 1W
CAPACITORS			
△ C403	BZ110149	E02LT4471M	CE 470 UF 35V
△ C414	AD301434	E02LU4101M	CE 100 UF 35V
△ C418	BZ110041	E02LT3471M	CE 470 UF 25V
C420	BZ110203	C0PLRR7W2K	CC 820 PF 2KV RR
△ C434	BZ110195	E02LU8220M	CE 22 UF 100V
C437	BZ210173	P4J7F3474J	CMPP 0.47 UF 250V PMS
△ C443	AE001322	P4N8FJ842H	CMPP 0.0084UF 1.25KV
C446	BZ110205	E02LU5220M	CE 22 UF 50V
△ C448	BZ110204	E0ELFD220M	CE 22 UF 250V
C503	BZ110061	C0JTB0513K	CC 0.001 UF 500V B
△ C505	BZ110025	P2122B224M	CMP 0.22 UF 275V ECQUL
△ C506	AD301026	CD39E0M13M	CC 0.001 UF 250V
△ C508	AE002878	CD39E0MQ3M	CC 0.0047UF 250V
C514	BZ110203	C0PLRR7W2K	CC 820 PF 2KV RR
△ C515	BZ110135	E02L02222M	CE 2200 UF 16V
C517	BZ110203	C0PLRR7W2K	CC 820 PF 2KV RR
△ C519	BZ110207	E02LT2102M	CE 1000 UF 16V
△ C521	BZ110092	E5EZFB101M	CE 100 UF 160V
△ C526	BZ110089	E02LFC221M	CE 220 UF 200V
C819	BZ110247	C0JBB0713K	CC 0.001 UF 2KV B
DIODES			
D001	BZ410037	D97U03301B	DIODE,ZENER MTZJ33B T-77
D106	BZ410054	0021721150	LED SLR-342VCT32
D403	BZ410043	D2WT011E10	DIODE,SILICON 11E1-EIC
D404	BZ410066	D97U06R21B	DIODE,ZENER MTZJ6.2B T-77
△ D405	BZ410063	D2WTAU02A0	DIODE,SILICON AU02A-EIC
△ D406	BZ410043	D2WT011E10	DIODE,SILICON 11E1-EIC
D408	BZ410043	D2WT011E10	DIODE,SILICON 11E1-EIC
D409	BZ410043	D2WT011E10	DIODE,SILICON 11E1-EIC
△ D410	BZ410063	D2WTAU02A0	DIODE,SILICON AU02A-EIC
△ D411	BZ410063	D2WTAU02A0	DIODE,SILICON AU02A-EIC
△ D412	BZ410020	D97U05R11B	DIODE,ZENER MTZJ5.1B T-77
△ D501	BZ410085	D2WXN40050	DIODE,SILICON 1N4005-EIC
△ D502	BZ410085	D2WXN40050	DIODE,SILICON 1N4005-EIC
△ D503	BZ410085	D2WXN40050	DIODE,SILICON 1N4005-EIC
△ D504	BZ410085	D2WXN40050	DIODE,SILICON 1N4005-EIC
△ D505	BZ410010	D28T21DQN9	DIODE,SCHOTTKY 21DQ09N-TA2B1
D506	AD300671	D97U01801B	DIODE,ZENER MTZJ18B T-77
D508	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
△ D509	AD300671	D97U01801B	DIODE,ZENER MTZJ18B T-77
△ D510	BZ410080	D2WXR02AM0	DIODE,SILICON RU2AM-EIC
D511	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
△ D512	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
△ D513	BZ410010	D28T21DQN9	DIODE,SCHOTTKY 21DQ09N-TA2B1
D514	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D515	AD300731	D2WXN49370	DIODE,SILICON 1N4937
△ D516	AD300731	D2WXN49370	DIODE,SILICON 1N4937

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description
DIODES			
D521	BZ410022	D97U06R81B	DIODE,ZENER
D522	BZ410006	D1VT001330	DIODE,SILICON
D528	BZ410021	D97U05R61B	DIODE,ZENER
D602	BZ410023	D97U09R11B	DIODE,ZENER
D603	BZ410006	D1VT001330	DIODE,SILICON
D604	BZ410058	D97U08R21B	DIODE,ZENER
D606	BZ410043	D2WT011E10	DIODE,SILICON
ICS			
IC101	AE005644	I56F07091C	IC
IC199	AE007183	A3M132X015	INIT DATA
△IC401	AE002783	I03TD804N0	IC
△IC501	BZ410088	0002E00610	PHOTO COUPLER
IC1001	BZ611001	I01DP75110	IC
TRANSISTORS			
Q105	BZ510086	TPATB03003	COMPOUND TRANSISTOR
△Q401	AE000656	TC1G058850	TRANSISTOR,SILICON
△Q402	BZ510089	TC5T01627Y	TRANSISTOR,SILICON
△Q501	AE002251	T25F035630	FET
△Q502	BZ510069	TCATC31980	TRANSISTOR,SILICON
△Q503	BZ510004	TA3T016240	TRANSISTOR,SILICON
Q505	BZ510073	TAATA12660	TRANSISTOR,SILICON
Q507	BZ510069	TCATC31980	TRANSISTOR,SILICON
Q601	BZ510070	TCAT032034	TRANSISTOR,SILICON
Q602	BZ510070	TCAT032034	TRANSISTOR,SILICON
Q603	BZ510070	TCAT032034	TRANSISTOR,SILICON
Q606	BZ510070	TCAT032034	TRANSISTOR,SILICON
Q607	BZ510069	TCATC31980	TRANSISTOR,SILICON
△Q801	AD300794	TCKT1473A0	TRANSISTOR,SILICON
△Q802	AD300794	TCKT1473A0	TRANSISTOR,SILICON
△Q803	AD300794	TCKT1473A0	TRANSISTOR,SILICON
COILS & TRANSFORMERS			
L001	AE000290	02167F3R3J	COIL
L401	AD301644	021L75472J	COIL
△L501	AE005719	0293000130	COIL,LINE FILTER
△L503	AE005718	028B140033	COIL,DEGAUSS
L801	BZ310113	021673221K	COIL
T401	BZ310157	045009003J	TRANS,HORIZONTAL DRIVE
△T502	AD302162	0481291084	TRANSFORMER,SWITCHING
JACKS			
J702	AE005633	060Q401112	RCA JACK
J703	AE005632	060Q401111	RCA JACK
△J801	BZ614434	066F120018	SOCKET,CATHODE RAY TUBE
△J1001	AD302163	060J121014	JACK,RCA,3.5
SWITCHES			
SW101	BZ612010	0504101T34	SWITCH,TACT
SW102	BZ612010	0504101T34	SWITCH,TACT
SW103	BZ612010	0504101T34	SWITCH,TACT
SW104	BZ612010	0504101T34	SWITCH,TACT
SW105	BZ612010	0504101T34	SWITCH,TACT
P.C.BOARD ASSEMBLIES			
PCB010	AE007182	A3M132X010	PCB ASS'Y
PCB110	AE005725	A3M131V110	PCB ASS'Y
MISCELLANEOUS			
B501	BZ310121	024HT03553	CORE,BEADS
B504	BZ310121	024HT03553	CORE,BEADS
BT001	AE005640	141R004016	BATTERY,MANGAN
BT002	AE005640	141R004016	BATTERY,MANGAN
△CD501	AE005639	1209414909	CORD,AC BUSH
△CP401	BZ614303	069S450089	CONNECTOR PCB SIDE
△CP502	BZ614283	069S420110	CONNECTOR PCB SIDE
CP503	BZ614016	069W01001A	CONNECTOR PCB SIDE
CP601	AE005634	069S260639	CONNECTOR PCB SIDE
CP801	AE007181	069W010340	CONNECTOR PCB SIDE
CD101A	AE005720	06C3012004	CORD,CONNECTOR
CD101B	AE005721	06C3012005	CORD,CONNECTOR
CP802A	BZ614276	067U005049	WIRE HOLDER
CP802B	BZ614276	067U005049	WIRE HOLDER
CP803A	BZ614334	067U004029	WIRE HOLDER
CP803B	BZ614334	067U004029	WIRE HOLDER
EL001	BZ614043	124116281A	EYE LET
EL002	BZ614044	124120301A	EYE LET

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description
△ F501	AD302166	081PC04005	FUSE
△ FB401	AE003330	043214050F	TRANSFORMER,FLYBACK
FH501	AE002634	06710T0009	HOLDER,FUSE
FH502	AE002634	06710T0009	HOLDER,FUSE
OS101	AD301048	0773071001	REMOTE RECEIVER
S101	AD302168	WBL6026038	FLAT CABLE
S102	BZ614371	WCL6834038	FLAT CABLE
△ SP1001	AE005722	070Y132027	SPEAKER
△ TH501	AD302000	D8EE0B1400	DEGAUSS ELEMENT
TM101	AE003331	076N0EH050	TRANSMITTER
△ TU001	AE006069	0163300018	RF UNIT
△ V801	BZ614442	098Y1404C8	CRT W/DY
X601	BZ613004	100CT3R505	CRYSTAL
RESISTOR			
	RC.....	CARBON RESISTOR	
CAPACITORS			
	CC.....	CERAMIC CAPACITOR	
	CE.....	ALUMI ELECTROLYTIC CAPACITOR	
	CP.....	POLYESTER CAPACITOR	
	CPP.....	POLYPROPYLENE CAPACITOR	
	CPL.....	PLASTIC CAPACITOR	
	CMP.....	METAL POLYESTER CAPACITOR	
	CMPL.....	METAL PLASTIC CAPACITOR	
	CMPP.....	METAL POLYPROPYLENE CAPACITOR	

TOSHIBA CORPORATION

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